

CLAIMS

1. A screw with stabilized strength characterized in that:

a screw head of said screw is provided with a bit engaging groove that is formed in a Y shape divided into three substantially equal parts in a circumferential direction at a specified radial distance from a central portion of said screw head,

groove widths of respective branching grooves that extend in a radial direction from a central portion of said bit engaging groove are formed so that said widths gradually expand, thus producing substantially equal intervals with a width dimension of boundary portions which are between respective adjacent branching grooves, and

respective outer circumferential end wall surfaces of said bit engaging groove are formed in a substantially perpendicular attitude to a specified depth from an opening edge part, and are then displaced downward toward a central portion of a screw neck from perpendicular lower edge portions, with an intersecting central portion being formed as a substantially circular conical bottom surface.

2. A screw with stabilized strength characterized in that:

a screw head of said screw is provided with a bit engaging groove that is formed in a Y shape divided into three substantially equal parts in a circumferential direction at a specified radial distance from a central portion of said screw head,

groove widths of respective branching grooves that extend in a radial direction from a central portion of said bit engaging groove are formed so that said widths gradually expand, thus producing substantially equal intervals with a width dimension of boundary portions which are between respective adjacent branching grooves, and

respective outer circumferential end wall surfaces of said bit engaging groove are formed so that opening edge part sides of said wall surfaces expand in width at a specified angle and are substantially perpendicular to a specified depth, and are then displaced downward toward a central portion of a screw neck from perpendicular lower edge portions, with an intersecting central portion being formed as a substantially circular conical bottom surface.

3. The screw with stabilized strength according to Claim 1 or 2 in which a bit engaging groove formed in a Y shape divided into three substantially equal parts in the circumferential

direction is provided, characterized in that the boundary portions which are between respective adjacent branching grooves are formed so that the boundary portions are adjacent via respective planar side wall surfaces that intersect at obtuse angles showing left-right symmetry with respect to respective branching grooves in the central portion of said bit engaging groove.

4. The screw with stabilized strength according to any one of Claims 1 through 3, characterized in that said bit engaging groove is provided with respective step parts that are displaced at an inclination downward toward the central portion of said screw neck from the perpendicular lower edge portions of respective outer circumferential end wall surfaces.

5. The screw with stabilized strength according to Claim 4, characterized in that said bit engaging groove is formed with the intersecting central portion of said respective step parts that are displaced with an inclination formed as a substantially circular conical bottom surface.

6. The screw with stabilized strength according to any one of Claims 1 through 4, characterized in that the boundary portions that are formed between respective adjacent branching grooves of said bit engaging groove are formed so that the boundary portions are adjacent via bent side wall surfaces showing left-right symmetry with respect to respective branching grooves in the central portion of the bit engaging groove.

7. The screw with stabilized strength according to any one of Claims 1 through 5, characterized in that the boundary portions that are formed between respective adjacent branching grooves of said bit engaging groove are formed so that the boundary portions are adjacent via respective planar side wall surfaces that intersect at obtuse angles showing left-right symmetry with respect to respective branching grooves in the central portion of the bit engaging groove.

8. The screw with stabilized strength according to any one of Claims 1 through 7, characterized in that said screw head in which said bit engaging groove formed in a Y shape divided into three substantially equal parts in the circumferential direction is provided is constituted in a pot-form or dish-form shape.

9. A screw with stabilized strength characterized in that:

a screw head of said screw is provided with a bit engaging groove that is formed in a Y shape divided into three substantially equal parts in a circumferential direction at a specified radial distance from a central portion of said screw head,

groove widths of respective branching grooves that extend in a radial direction from a central portion of said bit engaging groove are formed so that said widths gradually expand, thus producing substantially equal intervals with a width dimension of the boundary portions which are between respective adjacent branching grooves,

respective outer circumferential end wall surfaces of said bit engaging groove are formed in a substantially perpendicular attitude to a specified depth from an opening edge part, and are then displaced downward toward a central portion of a screw neck from perpendicular lower edge portions, with an intersecting central portion being formed as a substantially circular conical bottom surface, and

a surface of said screw head that forms the boundary portions which are between respective adjacent branching grooves of said bit engaging groove is formed as an inclined surface portion that is inclined gradually downward toward the central portion of said bit engaging groove.

10. A screw with stabilized strength characterized in that:

a screw head of said screw is provided with a bit engaging groove that is formed in a Y shape divided into three substantially equal parts in a circumferential direction at a specified radial distance from a central portion of said screw head,

groove widths of respective branching grooves that extend in a radial direction from a central portion of said bit engaging groove are formed so that said widths gradually expand, thus producing substantially equal intervals with a width dimension of boundary portions which are between respective adjacent branching grooves,

respective outer circumferential end wall surfaces of said bit engaging groove are formed so that opening edge part sides of said wall surfaces expand in width at a specified angle and are substantially perpendicular to a specified depth, and are then displaced downward toward a central portion of a screw neck from perpendicular lower edge portions, with an intersecting central portion being formed as a substantially circular conical bottom surface, and

a surface of said screw head that forms the boundary portions which are between respective adjacent branching grooves of said bit engaging groove is formed as an inclined surface portion that is inclined gradually downward toward the central portion of said bit engaging groove.

11. The screw with stabilized strength according to Claim 9 or 10, characterized in that the inclined surface portion formed on the surface of said screw head that forms the boundary portions which are between respective adjacent branching grooves of said bit engaging groove is constructed so that the inclined surface portion is inclined at an angle of 20° to 50° toward the central portion of said bit engaging groove from inner diameter sides of respective outer circumferential end edge parts of said bit engaging groove.

12. A combination of a screw with stabilized strength and a screwdriver bit, wherein:

said screw with stabilized strength is characterized in that:

a screw head of said screw is provided with a bit engaging groove that is formed in a Y shape divided into three substantially equal parts in a circumferential direction at a specified radial distance from a central portion of said screw head,

groove widths of respective branching grooves that extend in a radial direction from a central portion of said bit engaging groove are formed so that said widths gradually expand, thus producing substantially equal intervals with a width dimension of boundary portions which are between respective adjacent branching grooves, and

respective outer circumferential end wall surfaces of said bit engaging groove are formed in a substantially perpendicular attitude to a specified depth from an opening edge part, and are then displaced downward toward a central portion of a screw neck from perpendicular lower edge portions, with an intersecting central portion being formed as a substantially circular conical bottom surface; and

said screwdriver bit is characterized in that said screwdriver bit comprises a tip end blade part, vane parts, inclined parts, and protruding parts, wherein

said vane parts are respectively formed on said tip end blade part and have end edge parts that have a substantially right-angled shape to obtuse angular shape and engage with respective branching grooves of said bit engaging groove formed in a Y shape divided into three substantially equal parts in the circumferential direction in said screw head of said screw with stabilized strength,

said inclined parts are respectively formed on tip ends of said respective vane parts and match the displaced portions of said bit engaging groove, and

said protruding parts are formed to intersect and connect in a circular conical shape in a central axial part of the screwdriver bit.

13. A combination of a screw with stabilized strength and a screwdriver bit, wherein:

... said screw with stabilized strength is characterized in that:

a screw head of said screw is provided with a bit engaging groove that is formed in a Y shape divided into three substantially equal parts in a circumferential direction at a specified radial distance from a central portion of said screw head,

groove widths of respective branching grooves that extend in a radial direction from a central portion of said bit engaging groove are formed so that said widths gradually expand, thus producing substantially equal intervals with a width dimension of boundary portions which are between respective adjacent branching grooves,

respective outer circumferential end wall surfaces of said bit engaging groove are formed so that opening edge part sides of said wall surfaces expand in width at a specified angle and are substantially perpendicular to a specified depth, and are then displaced downward toward a central portion of a screw neck from perpendicular lower edge portions, with an intersecting central portion being formed as a substantially circular conical bottom surface; and.

said screwdriver bit is characterized in that said screwdriver bit comprises a tip end blade part, vane parts, inclined parts, and protruding parts, wherein

said vane parts are respectively formed on said tip end blade part and have end edge parts that have a substantially right-angled shape to obtuse angular shape and engage with respective branching grooves of said bit engaging groove formed in a Y shape divided into three substantially equal parts in the circumferential direction in said screw head of said screw with stabilized strength,

said inclined parts are respectively formed on tip ends of said respective vane parts and match the displaced portions of said bit engaging groove, and

said protruding parts are formed to intersect and connect in a circular conical shape in a central axial part of the screwdriver bit.

14. A combination of a screw with stabilized strength and a screwdriver bit, wherein:

said screw with stabilized strength is characterized in that:

a screw head of said screw is provided with a bit engaging groove that is formed in a Y shape divided into three substantially equal parts in a circumferential direction at a specified radial distance from a central portion of said screw head,

groove widths of respective branching grooves that extend in a radial direction from a central portion of said bit engaging groove are formed so that said widths gradually expand, thus producing substantially equal intervals with a width dimension of the boundary portions which are between respective adjacent branching grooves,

respective outer circumferential end wall surfaces of said bit engaging groove are formed in a substantially perpendicular attitude to a specified depth from an opening edge part, and are then displaced downward toward a central portion of a screw neck from perpendicular lower edge portions, with an intersecting central portion being formed as a substantially circular conical bottom surface, and

a surface of said screw head that forms the boundary portions which are between respective adjacent branching grooves of said bit engaging groove is formed as an inclined surface portion that is inclined gradually downward toward the central portion of said bit engaging groove; and

said screwdriver bit is characterized in that said screwdriver bit comprises a tip end blade part, vane parts, inclined parts, and protruding parts, wherein

said vane parts are respectively formed on said tip end blade part and have end edge parts that have a substantially right-angled shape to obtuse angular shape and engage with respective branching grooves of said bit engaging groove formed in a Y shape divided into three substantially equal parts in the circumferential direction in said screw head of said screw with stabilized strength,

said inclined parts are respectively formed on tip ends of said respective vane parts and match the displaced portions of said bit engaging groove, and

said protruding parts are formed to intersect and connect in a circular conical shape in a central axial part of the screwdriver bit.

15. A combination of a screw with stabilized strength and a screwdriver bit, wherein:

said screw with stabilized strength is characterized in that:

a screw head of said screw is provided with a bit engaging groove that is formed in a Y shape divided into three substantially equal parts in a circumferential direction at a specified radial distance from a central portion of said screw head,

groove widths of respective branching grooves that extend in a radial direction from a central portion of said bit engaging groove are formed so that said widths gradually expand, thus producing substantially equal intervals with a width dimension of boundary portions which are between respective adjacent branching grooves,

respective outer circumferential end wall surfaces of said bit engaging groove are formed so that opening edge part sides of said wall surfaces expand in width at a specified angle and are substantially perpendicular to a specified depth, and are then displaced downward toward a central portion of a screw neck from perpendicular lower edge portions, with an intersecting central portion being formed as a substantially circular conical bottom surface, and

a surface of said screw head that forms the boundary portions which are between respective adjacent branching grooves of said bit engaging groove is formed as an inclined surface portion that is inclined gradually downward toward the central portion of said bit engaging groove; and

said screwdriver bit is characterized in that said screwdriver bit comprises a tip end blade part, vane parts, inclined parts, and protruding parts, wherein

said vane parts are respectively formed on said tip end blade part and have end edge parts that have a substantially right-angled shape to obtuse angular shape and engage with respective branching grooves of said bit engaging groove formed in a Y shape divided into three substantially equal parts in the circumferential direction in said screw head of said screw with stabilized strength,

said inclined parts are respectively formed on tip ends of said respective vane parts and match the displaced portions of said bit engaging groove, and

said protruding parts are formed to intersect and connect in a circular conical shape in a central axial part of the screwdriver bit.

16. The combination of a screw with stabilized strength and a screwdriver bit according to any one of Claims 12 through 15, characterized in that:

in said screw with stabilized strength, said bit engaging groove is provided with respective step parts that are displaced at an inclination downward toward the central portion of said screw neck from the perpendicular lower edge portions of respective outer circumferential end wall surfaces, and an intersecting center part of said step parts that are displaced at an inclination is formed as a substantially circular conical bottom surface; and

in said screwdriver bit, step parts that match said step parts that are displaced at an inclination in said bit engaging groove are formed on the tip ends of said respective vane parts, and protruding parts are formed to intersect and connect in a circular conical shape in the central axial part of the screwdriver bit.

17. The combination of a screw with stabilized strength and a screwdriver bit according to any one of Claims 12 through 15, characterized in that said screwdriver bit is formed so that vane widths of respective vane parts extending in a radial direction from central axial part of the tip end blade part gradually expand so as to constitute intervals that are substantially equal to a width dimension of cut-in parts which are between respective adjacent vane parts.

18. The header punch used to manufacture the screw with stabilized strength according to Claim 1, characterized in that said header punch comprises:

protruding parts which have perpendicular end wall parts used to form respective outer circumferential end wall surfaces of a bit engaging groove formed in a Y shape divided into three equal parts in a circumferential direction in a screw head so that the wall surfaces are perpendicular to a specified depth, and

a circular conical protruding part which is provided on tip ends of said protruding parts and used to form the circular conical bottom surface of the bit engaging groove.

19. The header punch used to manufacture the screw with stabilized strength according to Claim 2, characterized in that said header punch comprises:

protruding parts respectively having inclined end wall parts and perpendicular end wall parts that are provided for forming respective outer circumferential end wall surfaces of a bit engaging groove formed in a Y shape divided into three equal parts in a circumferential direction in a screw head, said inclined end wall parts being used to expand opening edge part sides in width at a specified angle, and said perpendicular end wall parts being used to form said wall surfaces so that the wall surfaces are perpendicular to a specified depth; and

a circular conical protruding part which is provided on tip ends of said protruding parts and used to form the circular conical bottom surface of the bit engaging groove.

20. The header punch used to manufacture a screw with stabilized strength according to Claim 18 or 19, characterized in that inclined protruding parts are provided which are used to form inclined surface portions that are inclined gradually downward toward a central portion of the bit engaging groove, with respect to boundary portions which are between respective protruding parts that are adjacent in a circumferential direction of base portions of said protruding parts.

21. The header punch used to manufacture a screw with stabilized strength according to any one of Claims 18 through 20, characterized in that:

step parts, which are used to form step parts of the bit engaging groove that are displaced at an inclination, are respectively provided on tip ends of said protruding parts, and

a circular conical protruding part, which is used to form circular conical bottom part of said bit engaging groove, is provided on an intersecting central portion of said step parts.